

Study Guide

Student Edition
Pages 459–465**Arcs and Chords**

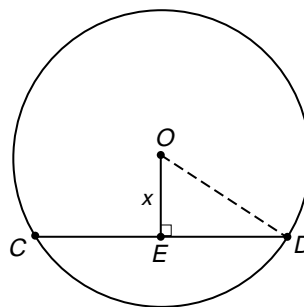
The following theorems state relationships between arcs, chords, and diameters.

- In a circle or in congruent circles, two minor arcs are congruent if and only if their corresponding chords are congruent.
- In a circle, if a diameter is perpendicular to a chord, then it bisects the chord and its arc.
- In a circle or in congruent circles, two chords are congruent if and only if they are equidistant from the center.

Example: In the circle, O is the center, $OD = 15$, and $CD = 24$. Find x .

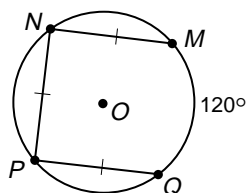
$$\begin{aligned} ED &= \frac{1}{2} CD \\ &= \frac{1}{2} (24) \\ &= 12 \end{aligned}$$

$$\begin{aligned} (OE)^2 + (ED)^2 &= (OD)^2 \\ x^2 + 12^2 &= 15^2 \\ x^2 + 144 &= 225 \\ x^2 &= 81 \\ x &= 9 \end{aligned}$$

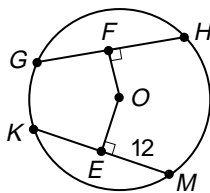


In each circle, O is the center. Find each measure.

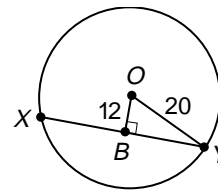
1. $m\widehat{NP}$



2. KM



3. XY



- Suppose a chord is 20 inches long and is 24 inches from the center of the circle. Find the length of the radius.
- Suppose the diameter of a circle is 30 centimeters long and a chord is 24 centimeters long. Find the distance between the chord and the center of the circle.
- Suppose a chord of a circle is 5 inches from the center and is 24 inches long. Find the length of the radius.